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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,610	07/28/2003	Wein Town Sun	TOP 300	4282
23995	7590	09/29/2005	EXAMINER	
RABIN & Berdo, PC 1101 14TH STREET, NW SUITE 500 WASHINGTON, DC 20005			BODDIE, WILLIAM	
			ART UNIT	PAPER NUMBER
			2674	

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/627,610

Applicant(s)

SUN, WEIN TOWN

Examiner

William Boddie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/28/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,3-7, and 9-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakajima et al. (US 6,664,943).

**With respect to claim 1**, Nakajima discloses, a liquid crystal display device having a driving circuit and a plurality of pixel units formed in combination, capable of accepting a digital signal input, comprising:

at least one pulse generator (121 in fig. 1) for generating a sample pulse (SP in fig. 18) which samples in time series an input digital signal (digital data in fig. 1) corresponding to a pixel (121 in fig. 1);

at least one sampler (105 in fig. 18) for sampling the input digital signal (in1 in fig. 18) in response to the sampling pulses (105 in fig. 18);

at least one comparator(100 in fig: 18, and col. 21, line 2) receiving a sampled digital signal (in1 is sampled in fig. 18) for comparison with reference voltage (in2), and outputting a comparison result (111 in fig. 18, also note col. 21, lines 58-60);

at least one latch for holding the comparison result (123 in fig. 1);  
and at least one digital-to-analog converter (125 in fig. 1) generating an analog signal based on the received digital signal, then applying the analog signal to a corresponding pixel (see fig. 1).

With respect to claim 3, Nakajima discloses, the liquid crystal display device of claim 1 (see above) further comprising level converters (124 in fig. 1) for converting the held digital signal to a signal having a high signal level and outputting the signal to the digital-to-analog converter (col. 12, lines 15-24).

With respect to claim 4, Nakajima discloses, the liquid crystal display device of claim 1 (see above) wherein the level of the reference voltage is half the amplitude of the input digital signal (col. 21, lines 41-44; half the amplitude of the input digital signal in1 is within the disclosed range of 0 volts and  $V_p$ ).

With respect to claim 5, Nakajima discloses, the liquid crystal display device of claim 1 (see above) wherein the sampler is a switch (105 and 106 in fig. 18).

With respect to claim 6, Nakajima discloses, the liquid crystal display device of claim 1 (see above) wherein the pulse generator is a shift register (121 in fig. 1).

With respect to claim 7, Nakajima discloses, a liquid crystal display device having a driving circuit and a plurality of pixel units formed in combination (fig. 2), capable of accepting a digital signal input, comprising:

a shift register for generating a sample pulse which samples in time series an input digital signal corresponding to a pixel (121 in fig. 1, also note fig. 23);

a data bus (b0,b1,b2 in fig. 23);

a set of switches for sampling an input digital signal in the data bus in response to the sampling pulses, wherein the number of the switches is equal to the number of data line in the liquid crystal display device (fig. 18 shows the general circuitry of the sampling latches, used in Nakajima, that comprises a switch for in2. As shown in fig. 23 this sampling latch circuitry is copied for each data line. Thus each data line is afforded an individual switch);

a set of comparators, each coupled to one switch (105 in fig. 18), having a first input terminal for receiving a digital signal sampled by the corresponding switch (in1 in fig. 18) and a second input terminal for receiving a reference voltage (in2 in fig. 18), and comparing the digital signal and the reference voltage to output a comparison (also note the merits for rejection of the comparators in claim 1);

a set of latches, each coupled to one of the comparators for holding the comparison result (123 in fig. 1); and

a set of digital-to-analog converters (125 in fig. 23), each coupled to one of the latches (123 in fig. 23) for generating an analog signal based on a digital signal held by the corresponding latch and applying the analog signal to a corresponding pixel.

With respect to claim 9, Nakajima discloses, the liquid crystal display device of claim 7 (see above) further comprising a set of level shifts (124 and 134 in fig. 1), each coupled between one of the latches (123 and 133 in fig. 1) and one of the digital-to-analog converters (125 and 135 in fig. 1) for amplifying the digital signal held by the corresponding latch to a signal having a high signal level and outputting the signal to the

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corresponding digital-to-analog converter (also note the merits of the rejection of claim 3 above).

With respect to claim 10, Nakajima discloses, the liquid crystal display device of claim 7 (see above) wherein the level of the reference voltage is half the amplitude of the input digital signal (col. 21, lines 41-44; half the amplitude of the input digital signal in 1 is within the disclosed range of 0 volts and  $V_p$ ).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (US 6,664,943) in view of Ogawa et al. (US 6,236,393).

With respect to claim 2, Nakajima discloses, the liquid crystal display device of claim 1 (see above).

Nakajima does not expressly disclose, analog buffers for receiving the analog signal generated from the digital-to-analog converter and applying the analog signal to a corresponding pixel.

Ogawa discloses, an analog buffer located in between the digital-to-analog converter and the corresponding pixel (577 in fig. 45, col. 3, lines 27-32).

Ogawa and Nakajima are analogous art because they are from the same field of endeavor namely, specific display element control elements.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include analog buffers, disclosed by Ogawa, in between the digital-to-analog converter and the corresponding pixel of Nakajima.

The motivation for doing so would have been to amplify the analog signal (Ogawa, col. 3, lines 27-32).

Therefore it would have been obvious to combine Ogawa and Nakajima for the benefit of amplifying the analog signal to obtain the invention as specified in claim 2.

With respect to claim 8, Nakajima discloses, the liquid crystal display of claim 7 (see above).

Nakajima does not expressly disclose, a set of analog buffers, each coupled to one of the digital-to-analog converters for receiving the analog signal generated from the corresponding digital-to-analog converters for receiving the analog signal generated from the corresponding digital-to-analog converter and applying the analog signal to a corresponding pixel.

Ogawa discloses, analog buffers that are connected in the same manner as the applicants as shown above in claim 2. As can further be seen from fig. 45, Ogawa has numerous analog signals entering the output circuitry. It is thus clear that there are a "set of analog buffers" within the output circuitry of Ogawa.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include a set of analog buffers in the display circuitry of Nakajima.

The motivation for doing so would have been to amplify the analog signal (Ogawa, col. 3, lines 27-32).

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Therefore it would have been obvious to combine Ogawa and Nakajima for the benefit of amplifying the analog signal to obtain the invention as specified in claim 8.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wlb  
9-19-05

  
REGINA LIANG  
PRIMARY EXAMINER